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10/727,131	12/02/2003	Osamu Kobayashi	GENSP104	4746

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EXAMINER	
NGO, NGUYEN HOANG	
ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/727,131	KOBAYASHI, OSAMU	
	Examiner	Art Unit	
	Nguyen Ngo	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-14 and 16* is/are rejected.

7)☒ Claim(s) *5 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The attempt to incorporate subject matter into this application by reference (page1- page2) is improper because applicant has failed to provide the U.S. Patent Application Serial Number or Patent Number.

Claim Objections

2. Claims 1, 5, 7, and 8 is objected to because of the following informalities:

As for claim 1: The "to carry a number multimedia data packets" in line 3 should be - to carry a number **of** multimedia data packets.

Examiner believes there to be a typo.

As for claim 5: The "receiver to optimize **an** equalize " in line 3 should be - receiver to optimize **and** equalize.

Examiner believes there to be a typo.

As for claim 7: The "to carry a number multimedia data packets" in line 5 should be - to carry a number **of** multimedia data packets.

Examiner believes there to be a typo.

As for claim 8: The "wherein the training fails, **the** another training session" in line 1 should be - wherein the training fails, another training session.

Examiner believes there to be a typo.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.
> [07-34-01]

4. Claim 7 recites the limitation "the multimedia source device to the multimedia sink device" in line 6. There is insufficient antecedent basis for this limitation in the claim.

5. Claims 6 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 6 and 16 recites the limitation "training session is **about** 10 ms in duration and wherein **approximately** 10^7 bits of data" in lines 1-2. The terms about and approximately does not further limit the claims and the Examiner cannot distinguish to how much about and approximately is.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (US 6914637) in view of Abbas et al. (US 2002/0075902), hereinafter referred to as Wolf and Abbas respectively.

Regarding claim 1, Wolf discloses in figure 2, of a source device containing a transmitter and a sink device containing a receiver. Wolf further discloses of a TMDS link (main link) that is used to transmit video data over the channels of the TMDS link (col12 line 5-8) and further states that signal transmission occurs in one direction, from a transmitter to a receiver (unidirectional main link arranged to carry a number of multimedia data packets from the video source to the video display, col2 lines 16-20).

Wolf further discloses that the receiver includes an interface for communication via the DDC (Display Data Channel) channel with the microcontroller of the source device (col12 lines 46-56) and that this DDC lines are used for bidirectional communication between the transmitter and a monitor associated with the receiver in accordance with the conventional Display Data Channel standard (bi-directional auxiliary channel arranged to transfer information between video source and a video display, col2 lines 30-35). Wolf further discloses;

that the transmitter sends packets including auxiliary data (video control information or test patterns, col6 lines 5-8) to the receiver during data islands, wherein each of the data islands is a time interval that neither coincides with nor overlaps any of the active video periods (prior to starting transmission of multimedia data packet streams from a video source to the video display over the main channel, col7 lines 25-30 and col17 lines 52-57).

that the transmitter and receiver must comply with the specification using a test mode in which the transmitter transmit encoded test pattern data to the receiver over the TMDS link (col50 lines 24-28), and having the test results, including the measured error rate of the recovered test data be sent back to the transmitter over the DDC channel of the link (col50 lines 33-37). Wolf further discloses that the transmitter can determine the reliability of the link as a function of various sets of operating parameters as a result of the test results and thus being capable of changing the parameters of the transmitter to reduce the error rate of the link (using the link training session to establish the stable main link, col50 lines 50-59).

Wolf is however silent in the specific limitation of having the link training session being carried out over the auxiliary channel to establish the main link.

Abbas however discloses a separate control information channel is to be allocated independent of interleaved or fast paths in order save valuable data payload bandwidth (abstract) and thus provides the motivation of having a separate control channel.

It would thus be obvious to a person skilled in the art to incorporate sending control information (testing patterns) in a separate control channel (DDC channel) disclosed by Abbas with the method of auxiliary data transmission, more specifically the method of testing the TMDS link to establish a reliable link disclosed by Wolf to effectively save valuable bandwidth of the main link.

10. Claims 2, 3, 4, 6, 11, 12, 13, 14, and 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (US 6914637) in view of Abbas et al. (US 2002/0075902) further in view of Martwick et al. (US 2004/0103333) hereinafter referred to as Wolf, Abbas, and Martwick respectively.

Regarding claim 2, Wolf and Abbas, more specifically Wolf, discloses of a transmitter that transmit the encoded test pattern data generated by a test pattern generator, to the

receiver (sending a pre-defined training patter by a main link transmitter, col50 lines 19-29).

Wolf and Abbas however fails to disclose determining whether or not the video display can achieve a solid bit lock based upon the training pattern. Wolf however discloses that there is a need to synchronize the counts by the transmitter and receiver and in general the synchronization will require using a signal that is common to both the transmitter and receiver as an origin from which to define the interval and by sending this signal across the link (col72 lines 49-56). Wolf thus provides the motivation of the need to synchronize the receiver to the transmitter in order to correctly accomplish synchronization of the encoder and decoder for proper exchange of data.

Martwick however disclose data synchronization method, which is performed according to received data synchronization patterns within a determined synchronization re-establishment period (Examiner correlates re-establishment period with test mode disclosed by Wolf, abstract). Matrick further discloses that a receiver performs bit lock according to signal transitions within the received data synchronization patterns (page7 [0077]) and that a data detect logic is required to perform data synchronization, including bit lock, as well as symbol lock, within a limited amount of time in order to provide low latency resumption (determining whether or not the video display can achieve a solid bit/character lock based upon the training pattern, page4 [0050]).

It would thus be obvious to a person skilled in the art to incorporate sending control information (testing patterns and synchronization patterns) in a separate control channel (DDC channel) disclosed by Abbas with the method of auxiliary data transmission, more specifically the method of testing the TMDS link to establish a reliable link disclosed by Wolf with the data synchronization method of sending data synchronization patterns to the receiver and performing a bit lock test disclosed by Martwick in order for proper exchange of data between the transmitter and the receiver. As already mentioned in claim 1, it should be obvious to have this data synchronization pattern be sent over the auxiliary channel in order to save bandwidth (handshaking carried on the auxiliary channel.

Regarding claim 3, Wolf, Abbas and Martwick discloses all the limitation of claim 3. More specifically, Wolf discloses that the test results be sent back to the transmitter over the DDC channel of the link (does not achieve the solid bit/character lock, the video display informs the video source via the auxiliary channel, col50 lines 34-35).

Regarding claim 4, Wolf, Abbas and Martwick discloses all the limitation of claim 4. More specifically Wolf discloses that the transmitter can determine the reliability of the link as a function of various sets of operating parameters, and the transmitter can optimize its operating parameters to reduce the error rate at the receiver (reducing the link rate by the video source, col50 lines 54-60). Martwick further discloses that at

process block 854 of figure 11, the receiver analyzes the received data synchronization training patterns to detect a predetermined symbol, and that process block 854 repeats until a symbol lock is detected (repeating the training session until the solid bit/character lock is achieved, page7 [0082]). Wolf further discloses that the test results be sent back to the transmitter over the DDC channel of the link (sending a fault message based upon failure to achieve the solid bit/character lock, col50 lines 34-35). It should be obvious to include a fault message in the test results, which are sent back.

Regarding claim 6, Wolf, Abbas and Martwick discloses all the limitation of claim 6. More specifically, Martwick discloses that data synchronization is required to be performed within a predetermined amount of time (training session is about 10 ms in duration, page6 [0062] and page 8 [0089]). It should be obvious that this predetermined amount of time can be equivalent to 10 ms, which may send a certain number of bits in this time frame.

Regarding claims 11, 12, 13, 14, and 16 Wolf, Abbas and Martwick discloses all the limitation of these claims. More specifically Martwick discloses that the present invention may be provided as a computer program product (page 3 [0034]). It should be noted that claims 11, 12, 13, 14, and 16 is simply the computer program product of the methods stated in claim 1, 2, 3, 4, and 6.

11. Claims 7, 8, 9, and 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (US 6914637) in view of Martwick et al. (US 2004/0103333), hereinafter referred to as Wolf and Martwick respectively.

Regarding claim 7, Wolf discloses in figure 2, of a source device containing a transmitter and a sink device containing a receiver. Wolf further discloses;

of a TMDS link (main link) that is used to transmit video data over the channels of the TMDS link (col12 line 5-8) and further states that signal transmission occurs in one direction, from a transmitter to a receiver (a unidirectional main link arranged to carry a number of multimedia data packets from source device to sink device, col2 lines 16-20).

that the receiver includes an interface for communication via the DDC (Display Data Channel) channel with the microcontroller of the source device (col12 lines 46-56) and that this DDC lines are used for bidirectional communication between the transmitter and a monitor associated with the receiver in accordance with the conventional Display Data Channel standard (bi-directional auxiliary channel arranged to transfer information between video source and a video display, col2 lines 30-35).

that the transmitter is an element of a source device and the receiver is an element of a sink device, which is coupled to the TMDS link (main link receiver unit at the video display and a main link transmitter unit at the video source each coupled to the main link, col12 lines30-32 and lines 46-17).

that the transmitter includes a test pattern generator, and in test mode, transmitter's test pattern generator transmit encoded test data to receiver over a TMDS

link (col50 lines 24-28). Wolf further discloses having the test results, including the measured error rate of the recovered test data be sent back to the transmitter over the DDC channel of the link (col50 lines 33-37) and that the transmitter can determine the reliability of the link as a function of various sets of operating parameters as a result of the test results and thus being capable of changing the parameters of the transmitter to reduce the error rate of the link (a training pattern unit arranged to generate a training pattern used by the transmitter in a training phase (test mode) to adjust an equalizer which is updated based upon a result for each training session, col50 lines 50-59).

Wolf is however silent in the limitation of having an auxiliary channel slave unit coupled to the auxiliary channel. Wolf however discloses of a Hot Plug Detect line on which the monitor transmits a signal that enables a processor associated with the transmitter to identify the monitor's presence (col2 lines35-40) and thus provide the motivation of correctly determining when a video sink is present.

Martwick however discloses of a method of detection of an electrical idle exit condition during receiver operation in an electrical idle state. Martwick further discloses once the receiver detects an electrical idle exit condition using a squelch voltage detector (auxiliary channel slave unit), the receiver begins a timer. This timer is stopped once data synchronization is complete. Once data synchronization is complete, the transmitter and receiver pair resumes normal (display state) operation (an auxiliary channel slave unit wherein both the main link receiver unit and auxiliary channel slave

unit are each in an electrical idle state and wherein a hot plug event has been detected then the system moves to a display state at which time the auxiliary channel slave unit is turned on and the main link transmitter unit responds to a receiver link capability read command, page 6 [0064]). It should be obvious that an electrical idle exit command correlate to the Hot Plug Detect disclosed above and that the auxiliary channel slave unit be coupled to the auxiliary channel as synchronization is performed on this channel as discussed in claim 2 and disclosed by Wolf.

It would thus be obvious to a person skilled in the art to incorporate the method of detection of an electrical idle exit condition during receiver operation in an electrical idle state disclosed by Martwick with the method of auxiliary data transmission, more specifically the method of testing the TMDS link to establish a reliable link disclosed by Wolf to effectively detect and synchronize the presence of a video sink.

Regarding claim 8, Wolf and Martwick disclose all the limitation of claim 8. More specifically Martwick discloses that at process block 854 of figure 11, the receiver analyzes the received data synchronization training patterns to detect a predetermined symbol, and that process block 854 repeats until a symbol lock is detected (when the training fails, another training session is commenced, page7 [0082]).

Regarding claim 9, Wolf and Martwick disclose all the limitation of claim 9. More specifically Martwick discloses once data synchronization is complete (bit lock and

symbol lock passes), the transmitter and receiver pair resumes normal (display state) operation (training session passes, than the display is normally operating, page 6 [0064]).

Regarding claim 10, Wolf and Martwick disclose all the limitation of claim 9. More specifically Martwick discloses until data synchronization is complete, the timer value is compared to the synchronization re-establishment period and when the timer exceeds the synchronization re-establishment period, the transmitter and receiver pair enter a recovery state (page 6 [0064]). It should be obvious that when there is no activity in the auxiliary channel, meaning no synchronization data is being sent from transmitter to receiver, synchronization will not be reached and the timer value will exceed the synchronization re-establishment period causing the transmitter and receiver pair to enter a recovery state (standby state).

Allowable Subject Matter

12. Claims 5 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. These claims are allowable due to the further limitations of having the training pattern includes a number of training phases wherein phase 1 represents a shortest run

length and wherein a phase 2 are used by the receiver to optimize and equalize and wherein in a phase 3, both a bit lock and a character are achieved.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Son et al. (U.S 6697376), Logical Node Identification In An Information Transmission Network

b) Warner et al. (U.S 2003/0145258), DVI Link With Parallel Test Data.

c) Pasqualino et al. (U.S 2002/0136241), Digital Visual Interface With Audio And Auxiliary Data

d) Bottomley et al. (U.S 5909465), Method and Apparatus For Bidirectional Demodulation of Digital Modulated Signals.

e) Kimelman et al. (U.S 2004/0210805), Communication Interface For Diagnostic Circuits Of An Integrated Circuit.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen Ngo whose telephone number is (571) 272-8398. The examiner can normally be reached on Monday-Friday 7am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N.N.
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RICKY NGO
PRIMARY EXAMINER

8/5/05